



MILESECURE-2050

Multidimensional Impact of the
Low-carbon European Strategy on Energy Security, and
Socio-Economic Dimension up to 2050 perspective

The “human factor” in energy transition

Gabriele Quinti (LSC), Giovanni Caiati (LSC)



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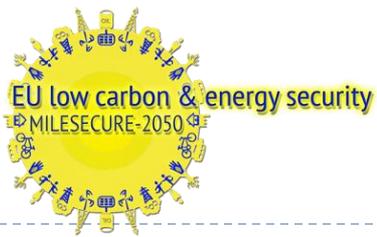


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1. Foreword

Two main Issues

- ▶ Human factor in energy systems in transition
- ▶ Energy transition on the basis of anticipatory experiences

Human Factor in energy systems in transition / 1

- ▶ Energy transition toward a Low Carbon Society can only be a discontinuous process, characterised by a fundamental leap:
- ▶ From a low relevance to a high relevance of human factor
- ▶ To neglect this state of affairs means to put in danger energy transition itself

Human Factor in energy systems in transition/2

▶ Discontinuity

- ▶ When energy transition overcome a certain threshold of intensity in the passage toward a low carbon energy system...
- ▶ The human factor is no longer just an obstacle, a receiver of a given technology, or just another element to be considered
- ▶ The human factor is the key player and the engine of the energy transition

▶ Riskiness

- ▶ Precisely because of the centrality of the human factor, Energy transition is characterized by the emergence of new risks that add up to the traditional ones

Human Factor in energy systems in transition / 3

- ▶ For these reasons, the human factor should be treated as a constitutive element of the energy systems
 - ▶ Both in terms of the system of energy production and consumption
 - ▶ Both in terms of energy security (emergence of new risks)
- ▶ The need to deal with the human factor in a manner consistent with the production, management and consumption of energy, has brought us, in the study of energy systems in transition, to talk about **Human Energy** (see below)

Energy transition on the basis of Anticipatory Experiences

- ▶ Need to study the transition to a future low carbon society on the basis of concrete factual elements and not merely on hypothesis
- ▶ Study of anticipatory experiences of low carbon society

2. ANTICIPATORY EXPERIENCES

*an empirical base to study energy
transition*

Anticipatory Experiences of energy transition

- ▶ The research was based on the identification of a series of "**anticipatory experiences**" of energy transition
- ▶ Experiences containing some fundamental features (thus anticipating them) of a society based on environmentally sustainable energy sources
- ▶ The concept of "Anticipation" allows us to use a methodological approach focused on **concrete factual elements** of energy systems in transition and not mere hypotheses.

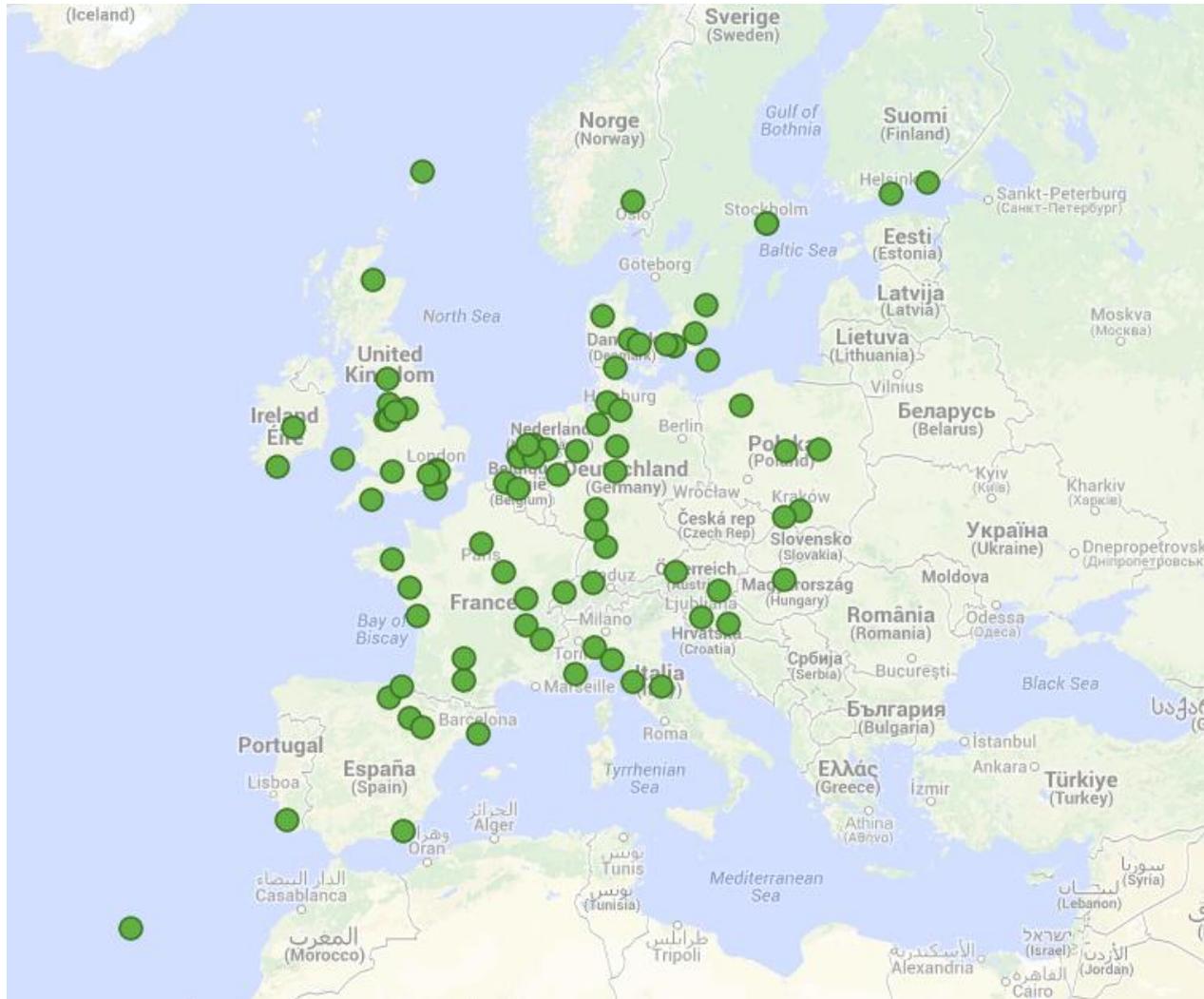
Singling out anticipatory experiences

- × A hard look at different databases: 1 500 experiences
- × A long list of 440 experiences
- × First Analysis: 93 Anticipatory experiences
- × In depth Analysys: 23 Anticipatory experiences

Research tools and methodology

- ▶ **Identification of Anticipatory Experiences**
 - ▶ Call for experiences
 - ▶ Expert consultation
 - ▶ Database consultation
 - ▶ Four threshold criteria: Factualness, Social relevance, Systematicity, Transparency
- ▶ **Analysys of Anticipatory Experiences**
 - ▶ Collection of a dossier for each experiences
 - ▶ In depth interviews

Distribution of the Anticipatory Experiences in European Union



Energy Island, Samsø



Eva Lanxmeer, Culemborg



Biogas from waste, Peccioli



City of cyclists, Copenhagen



Superblocks, Vitoria-Gasteiz



3. Human Energy

Human energy approach

- ▶ The conception of **human energy** is wider than “energy” in traditional terms
- ▶ Give us the possibility to consider in the study of energy systems
 - ▶ the technological aspects...
 - ▶ ...but also social and personal dynamics.
- ▶ HE is a holistic conception of energy ...
- ▶ but also **articulated in three dimensions:**
 - ▶ extra somatic (E)
 - ▶ endosomatic or personal (P)
 - ▶ social (S)

Extrasomatic energy

- ▶ Characterized by the use of natural resources
- ▶ Through the adoption of all kinds of equipment, technology or machinery
- ▶ Extrasomatic energy can be assimilated to the capacity of using all energy sources, from "carbon" to renewable sources

Social energy

- ▶ Manifests itself in different forms of social activism
- ▶ Brings together different forms of social activism, that coordinate and orient different social actors toward a common energy transition goal (who, in isolation would mostly be unable to meet the challenges of energy transition).

Endosomatic or personal energy

- ▶ Originates directly from the body
- ▶ Can be assimilated to the capacity of effecting profound changes at the personal level in one's daily actions and convictions, in view of a more sustainable lifestyle

4. Human energy and energy transition

Human energy and Energy Systems in Transition

- ▶ **Discontinuity**
- ▶ New riskiness

ET depth

- ▶ All AEs explicitly tend to have a profound effect on the local reality, in technological, organizational, social and personal terms.
 - ▶ A deep awareness of social and environmental dangers
 - ▶ Critical attitude to contemporary society
 - ▶ Adoption of innovative approaches
 - ▶ Construction of new social configurations

ET Depth → Stress

- Therefore, energy transition is linked to profound social change and not just purely technological change
- → generate, in most cases, a general state of **socio-cultural stress**, with psychological implications

Human energy and Energy Systems in Transition

- ▶ Discontinuity
- ▶ **New riskiness**

The state of stress in ET

- ▶ Energy transition can lead to many different forms of opposition, conflicts, tensions and resistances that involve the social system as a whole.
 - ▶ Social conflicts
 - ▶ Dissonance with the surrounding reality
 - ▶ Tensions related to personal resistance to change
 - ▶ Conflicts within the promoter group

The management of stress

- ▶ Human Energy as a whole
 - ▶ Depth
 - ▶ Stress
- ▶ We will see how Anticipatory Experiences, produce a specific forms of risk control performing a specific social function for each of the three dimension of human energy
 - ▶ Extrasomatic
 - ▶ Social
 - ▶ Personal



Three social functions

- ▶ Three dimension of Human Energy
 - ▶ Social -> **Cybernetic Function**
 - ▶ Personal -> **Repositioning Function**
 - ▶ Extrasomatic -> **Localisation Function**

Cybernetic function (social energy)

- ▶ Tensions and conflicts linked to the situation of stress are managed through a series of continuous, coordinated and simultaneous actions involving people as the protagonists of energy transition, and not as mere receptors.
 - ▶ Activation of participatory decision making
 - ▶ Exercise of negotiation
 - ▶ Action of continuous communication
 - ▶ Gaining an institutional space for energy transition.
- ▶ **Weight and relevance:** CF regards the governance of energy transition

Repositioning function (endosomatic energy)

- ▶ Individuals reposition themselves in the context of a new energy (and social) system where the relationship between body and reality changes deeply.
 - ▶ Return to the use of muscular strength
 - ▶ Spreading of health care culture
 - ▶ New attention toward practical issues of everyday life
 - ▶ Self-perception is reframed in the new energy system
 - ▶ Spreading of Energy literacy
- ▶ **Weight and relevance:** RF covers an anthropological change: for three centuries we tried to minimize bodily fatigue through the use of the machines; it seems that in the context of the ET we witness an albeit partial reverse of this trend

Localisation function (extrasomatic energy)

- ▶ A new relationship between man and the environment is established when people have a more active role in controlling the energy system. Localization may be assimilated to phenomena such:
 - ▶ Technical proximity
 - ▶ Energy autonomy and ownership of energy production
 - ▶ Repairing capacity of users
- ▶ **Weight and relevance:** LF regards the way in which the change takes place from carbon energy sources to low carbon and efficient technologies

In summary

- ▶ **Human Energy as a whole**
 - ▶ Discontinuity -> **Depth**
 - ▶ New risks -> **Stress**
- ▶ **Three dimension of Human Energy**
 - ▶ Extrasomatic -> **Localisation Function**
 - ▶ Social -> **Cybernetic Function**
 - ▶ Personal -> **Repositioning Function**